

Development and Psychometric Evaluation of the Job Satisfaction Scale for Thai Nurses in Primary Care Units

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Abstract: Nurses are crucial in providing comprehensive care across age groups and healthcare dimensions in primary care services. In Thailand, there are primary care units with no physicians in most primary healthcare units. Thus, nurses' roles and practices in primary health are different from those of nurses in hospitals. In addition, workload, time spent on non-nursing tasks, unsafe working environment, limited opportunities for professional development, and living in rural areas may contribute to job discouragement. Measuring job satisfaction among these nurses may need a scale other than the scale based on nurses working in hospitals. This study aimed to develop and assess the psychometric properties of the Job Satisfaction Scale among 420 Thai nurses working in primary care units. The scale's items were formulated by a literature review on nurse satisfaction, satisfaction measurement tools, conducting focus group discussions, and undergoing expert reviews. A two-round Delphi approach was employed to validate the content of the scales with three domains and 30 items. The initial scale exhibited acceptable content validity and reliability.

Subsequently, a psychometric evaluation was conducted using exploratory factor analysis to determine the construct validity of the scale along with its internal consistency and reliability. The results revealed five domains with 30 items comprising the working environment, the value of work, success and progress, work abilities, and work support and welfare. Finally, the commonalities of the 30 items were adequately explained by the instrument's domains, with an acceptable internal consistency reliability of the entire scale and for the five domains. Therefore, the scale is suitable for assessing the job satisfaction of nurses in primary care units. However, further evaluation of the construct validity by other methods is needed in studies.

Keywords: Job Satisfaction, Nurses, Primary Care, Scale Development

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Introduction

Workforce engagement enhances the quality of care to achieve universal health coverage and Sustainable Development Goals (SDGs). Medical workforce shortages in many countries, particularly those related to the nursing and healthcare sectors, have contributed to detrimental issues for healthcare

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outcomes, patient safety, and people-centered care.^{1,2} Turnover of health personnel, especially nurses, is at a critical level globally, resulting in a nursing shortage.³

There are various causes of burnout and dissatisfaction among nurses, including working the night shift, high-stressful roles, high workload, fatigue, excessive responsibility, teamwork management,⁴ health risks and unsafe workplaces, and performance expectations of service users.⁵ Strengthening a sense of responsibility and organizational commitment may lead to job dissatisfaction; thus, increasing job satisfaction can result in higher efficiency, organizational success, and quality of care.^{6,7}

Job satisfaction is a complex concept that incorporates internal and external motivation aspects. In addition, nurses' satisfaction arises from fulfilling their needs and desires, happiness or gratifying emotions, and job value or equity.⁸ This explains why job satisfaction is a crucial factor related to an organization's commitment, job performance, job stress, workload, and work environment.⁹ Nurses' satisfaction is linked to their pride in autonomy, interpersonal relations, and patient care.¹⁰ Additionally, nurse job satisfaction is affected by their work conditions, salary, teamwork, work engagement, loyalty to the organization, workplace happiness, work environment, and organizational achievement.¹¹ Therefore, job satisfaction is critical to workforce engagement, work efficiency, and quality of care.¹² Nurses working in different care delivery settings may experience variations in the components or domains that contribute to their job satisfaction. These domains may include work environment, culture and autonomy, healthcare resource availability, transportation to work, and the ability to transition between hospital and outreach healthcare unit.

At the primary care level, nurses are crucial in delivering comprehensive healthcare services across various age groups and health dimensions. These dimensions include disease prevention, health promotion, primary medical care, and rehabilitation,¹³ especially concerning the management of non-communicable diseases

and emerging diseases, women's and children's care, environmental health care, and disaster management.¹⁴ Furthermore, nurses devote their time to providing holistic nursing care to enhance national health indicators, oversee healthcare facilities, and foster collaboration with multidisciplinary healthcare teams.^{15,16} Their efforts aim to improve the health and well-being of patients within their community. Moreover, issues such as demanding workloads, work-life imbalances, insufficient healthcare resources,¹⁵ time spent on non-nursing tasks, limited opportunities for professional growth, and unsafe work environments collectively contribute to feelings of discouragement and dissatisfaction among nurses.^{16,17}

Job satisfaction includes multiple domains and is vital in enhancing the quality of care and patient outcomes. By fostering increased job satisfaction within the workplace, organizations can support their staff's capacity to work effectively and promote staff retention.¹⁸ Additionally, individual characteristics such as age, educational background, professional experience, and work hours have a significant impact on nurses' job satisfaction.¹⁹ Existing studies have demonstrated that the practice environment,²⁰ workplace stressors, and limited facilities in rural areas exert a notable influence on the job satisfaction and outcome of nurses working in rural settings.²¹ Within middle-income countries, inadequate working conditions and a scarcity of resources erode nurses' job satisfaction and motivation, consequently affecting the quality of care provided and contributing to higher attrition rates.²²

Numerous reviews have indicated that factors such as fair remuneration, career advancement opportunities, autonomy in decision-making, positive teamwork dynamics, and a supportive work environment are crucial to developing a comprehensive job satisfaction scale for nurses.^{8,22-29} In Thailand, the existing evidence about nurses' job satisfaction scales in hospitals has revealed the presence of eight factors comprising 107 items. These factors include incentives, personal autonomy and recognition, supervisor support, social

aspects, workload, work environment, nursing policies, and assertiveness.²³ Reviews of job satisfaction assessment scales have only focused on job satisfaction in hospital settings. Research on developing a job satisfaction scale specifically tailored for nurses working in diverse environments and community contexts, where autonomy in care and insufficient healthcare resources in primary care settings differ from hospitals, is limited.

Recognizing the rapid social and economic changes impacting people's health, the Thailand Nursing and Midwifery Council (TNMC) has proactively implemented a policy to conduct studies exploring updated roles, practice phenomena, and the job satisfaction of nurses in primary care units (PCUs). Therefore, the objective of this study was to develop and test the psychometric properties of the Job Satisfaction Scale for Nurses in Primary Care Units (JSS-NPCU). This scale can serve as a valuable tool for assessing the job satisfaction of nurses working in primary care settings. The insights gained from this assessment will facilitate identifying individual needs, enhance interpersonal collaboration, and improve the work environment, ultimately leading to increased work engagement and enhanced quality of care within PCUs.

Literature Reviews and Conceptual Framework

Job satisfaction refers to a positive feeling or attitude that an individual holds towards working within their workplace environment.²⁵ A combination of intrinsic and extrinsic factors influences job satisfaction. Intrinsic factors include recognition of work, personal development, and features of work, while extrinsic factors include remuneration, supervision, interpersonal relations, work and living conditions.²²

Job satisfaction is a multifaceted concept consisting of three key attributes: clinical autonomy, interpersonal relations, and the performance of nurses

in providing patient care. Clinical autonomy for nurses is influenced by various factors, including the scope of their practice, career development, support of management, and trust among colleagues. Interpersonal relationships involve inter-professional interactions, effective communication, teamwork, and collaboration. The quality of patient care is also essential to job satisfaction, which is enhanced by positive relationships with patients, strong social and professional connections, supportive workplace policies, effective supervision, high-quality care provision, and a supportive work environment.^{10,23-28}

Job satisfaction is associated with individual factors including experience, gender, number of family members, education, personality traits, professional autonomy,²³ professional statuses,²⁴ professional achievements, and competency.²⁷ Interpersonal factors also have a significant impact with nurse-supervisor assertiveness,^{23,29} relationships, interactions within the team,^{24,28} appropriate support,²⁵ and dynamics among colleagues playing a crucial role.²⁸ Moreover, external factors, such as incentives, work environment,^{23,25,29} praise and recognition, control and responsibility,^{26,27} compensation, promotions, fringe benefits, rewards,²⁸ workplace policies, and overall benefits must be considered, as they collectively contribute to job satisfaction.

Existing tools (**Appendix Table 1**) have identified that nurse job satisfaction primarily comprises three main dimensions: value and autonomy, working conditions and welfare, and work support and environment.^{8,22-30} The reliability of existing job satisfaction scales for nurses is demonstrated by Cronbach's alpha coefficients ranging from .70 to .95 accounting for approximately 43.9%–68.9% of the variance (**Appendix Table 1**). In this study, the JSS-NPCU was developed by synthesizing information from the literature, interviews, and expert consensus,³¹ resulting in three key domains: a sense of value, working conditions, and support.

Study Aim

This study aimed to develop the Job Satisfaction Scale for Nurses in Primary Care Units (JSS-NPCU) in Thailand and to evaluate its psychometric properties.

Methods

Study Design: This study was a cross-sectional study with instrument development of the scale previously mentioned, utilizing focus group discussions and a two-round Delphi approach to determine content. The instrument development process in this study adhered to DeVellis' protocol³¹ and Streiner and Kottner's recommendations for reporting the results of instrument and scale development and testing studies.³²

Ethical Considerations: This study was approved by the Ethics Committee for Human Research of the Burapha University (Approval No 153/2018). This research was a part of the Thailand Nursing and Midwifery Council (TNMC) study focusing on practice phenomena, roles, and the job satisfaction of nurses in PCUs. The scale was undertaken from December 2018 to May 2019. Participants were informed about all aspects of the study before they consented to participate in the study, including their right to refuse or withdraw from the study at any time. In addition, a code number and letter format were collected separately to ensure confidentiality.

Sampling and Setting: The study population was nurses working in PCUs in Thailand. According to Kyriazos,³³ the number of study participants (N) is determined by the number of questions (p) in the instrument that is developed and ranges between 5:1 – 10:1.^{31,36} The questionnaire has 30 questions. Hence, a sample of 300 nurses was adequate to test the quality of the instrument. Using cluster random sampling, three provinces of the 13 health regions, including Bangkok Metropolis, were randomly selected. The participants represented 38 provinces and 195 PCUs. The estimated participants were then randomly selected proportionately to the five PCUs of 38 provinces. Two to three nurses in each PCU with more than one

year of experience were included by simple random sampling, and thus, 420 nurses were recruited and agreed to participate in this study.

Instrument development

The procedure of this study was organized into two phases with six steps as follows:

Phase 1: Scale Development

Step 1: Identifying the pre-specified domains:

Based on the literature review, the job satisfaction of nurses was categorized and synthesized into three pre-specified domains: sense of value, working conditions, and support. These domains were approved by two nurse experts from primary care settings and five nurse educators in community health nursing.

Step 2: Identifying domain definition and content domains:

The JSS-NPCU scale was examined by a panel of 14 experts, consisting of the research project consultants, academic nurses from various educational institutions, and advanced practice nurses (APNs) from the research working group meeting. Focus group discussions were conducted to identify the operational definitions for the pre-specified domains: 1) sense of value refers to the perception of the value of the work, the benefit of the work for others and the community, impact on population health, feeling challenged by work, success with work assignment, progress of work, teamwork acceptance, and pride related to job performance; 2) working conditions refer to the perception of being satisfied with fair assignments, assignments suitable for your abilities, competence in your work, teamwork support, training support, having enough human resources, having enough medical supplies and health resources, and enthusiasm to work; 3) support refers to the perception of being satisfied with your salary, welfare, work, promotions, the organization's management, the organization's environment, safety and security, leader support, organizational support, and community support. The feedback and comments from individuals who comprised the panel of experts were used to revise the wording of the items. The experts reviewed the coverage, structural consistency, and language

content, as well as the guidelines to improve them until they unanimously accepted. Then, a focus group discussion was performed with nine experts in primary care using the same discussion questions to verify the quality of the information.

Step 3: Items generation: The initial scale consisted of three domains based on the information obtained from the focus group. The tool's quality was checked by examining the content validity based on the commentary from expert nurses and academic experts who practiced nursing in PCUs. The JSS-NPCU is divided into three domains with a total of 30 items: a sense of value (10 items), working conditions (10 items), and support (10 items), yielding a total of 30 items. The assessment scale of satisfaction uses a 5-point rating scale format with responses ranging from 1 to 5 (1 always dissatisfied; 2 rarely satisfied; 3 sometimes satisfied; 4 frequently satisfied; and 5 always satisfied). The scores of three negative items were reversed before the analysis to resolve any negative inter-item correlation issues.

Phase 2: Evaluating the Psychometric Properties of the JSS-NPCU

Step 4: Content validity assessment: Each item was carefully reviewed and content validated if the JSS-NPCU represents its domains by 14 experts using a two-round Delphi approach.^{34,35}

In the first round, the 14 experts were asked to rate the extent to which they agreed or disagreed with each item and its domains. Responses were selected based on a rating scale of 1 to 4, ranging from "1 = strongly disagree" to "4 = strongly agree" for each scale item and its domains. The experts' recommendations and suggestions on the first draft of the pool of items were taken into account. Some items were revised based on the experts' suggestions. The retained and revised items were integrated into measurement instruments. The scale level, content validity index S-CVI for the first draft of the 30-item JSS-NPCU was .86.

In the second round of expert review, the panel was asked to rate the relevancy, clarity, conciseness,

and agreement of the scale's items, providing scores for 1) relevancy on a 4-point scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, and 4 = completely relevant), and 2-point descriptor scale for 2) clarity (yes = clear and no = unclear), and 3) conciseness (yes = concise and no = redundant). All experts were asked to judge how representative each item was of the content domain and to address whether the content domains adequately measured all the domains of the construct.³⁴ Additionally, the content experts were asked to judge the clarity of item construction and wording. Content analysis was applied in the content item construction phase.³⁵ The item content validity index (I-CVI) ranged between .80 to 1.00, with a mean I-CVI of .91, and the S-CVI was .94. The initial draft of the 30-item JSS-NPCU was then tested for face validity. This process aimed to ensure the understandability of the language used in each item in the JSS-NPCU. Three nurses who worked in PCUs were purposively selected for face validity testing. The readability of the JSS-NPCU was tested to clarify the understanding of each item. Some items were revised for better reading comprehension.

Step 5: Trial of the initial scale: The initial JSS-NPCU was trialed with 30 nurses from 10 PCUs in both rural and urban settings. This trial aimed to assess participants' understanding, the time required for completion, and the scale's reliability. The initial internal consistency reliability of the 30-item JSS-NPCU showed Cronbach's alpha coefficient of .96.

Step 6: Psychometric evaluation: The questionnaire is divided into two parts. The first part consists of personal information, while the second part includes the 30-item JSS-NPCU. The questionnaires, and a consent form were distributed to the participants through contacts provided by PCUs and addresses from the National Health Security Office. Data collection took place from March 2019 to May 2019. Participants were asked to complete the questionnaire within two weeks and return it by mail. If participants did not return the completed questionnaires

within four weeks, follow-up calls were made to communicate with them.

Data Analysis: Initially, data from 435 respondents were screened. After excluding participants who did not meet the inclusion criteria, 420 respondents remained. A correlation matrix for each domain, the process recommended for examining prior to conducting factor analysis, was employed. The statistics employed for data analysis were: 1) descriptive statistics including frequencies, percentages, means and standard deviations were used to describe characteristics of the variables and to explain the general information of the participants; 2) exploratory factor analysis (EFA) was used to analyze the construct validity of the JSS-NPCU. The assumptions of the EFA were evaluated based on the following criteria: 1) the Kaiser–Mayer–Olkin measure of sampling adequacy test should be greater than .70; 2) Bartlett's test of sphericity should be statistically significant; and 3) the bivariate distributions among the variables should be

greater than .30. The initial factor analysis was conducted by using the principle component analysis (PCA) to summarize the interrelationships among variables. Then, factor rotation was performed on more interpretable factors by using the orthogonal rotation. The criteria used to evaluate the items were a loading factor exceeding 0.4 and a communality greater than 0.4. Acceptance was based on scree plots and eigenvalues greater than one.³⁶

Results

There were 420 nurses working in primary care units in 13 health regions throughout Thailand who participated in this study. Most were female, 94.3%; the average age was 42.75 ± 8.72 years; 84.9% had a bachelor's degree, and 77.6% were licensed as specialized nurse practitioners, as presented in **Table 1**.

Exploratory factor analysis (EFA) of the scale revealed that the Kaiser–Meyer–Olkin (KMO)

Table 1. General information of nurses working in primary care units in Thailand (n = 420)

	Characteristics of participants	Number	Percent
Sex			
Female		396	94.3
Male		24	5.7
Age (years) Mean = 42.75, SD = 8.72			
Min = 23 Max = 60			
21–30		53	12.6
31–40		93	22.2
41–50		189	45.0
51–60		85	20.2
Education			
Bachelor degree		356	84.8
Master degree			
Community Health Nursing/		38	9.0
Community Health Nurse Practitioner			
Other in nursing		8	1.9
Not Nursing		17	4.0
Doctoral Degree Nursing		1	0.3
Licensed as specialized nurse practitioners			
Yes		326	77.6
No		94	22.4

measure verified the sample adequacy ($KMO = .925$). Bartlett's test of sphericity suggests that the constructed pattern of these 30 items was suitable for conducting factor analysis ($\chi^2 = 7359.69$, $df = 420$, $p < .001$).

The factor loading scores ranged from .431 to .893, as presented in **Table 2**.

The survey-based component analysis using the Varimax Rotation Method found that the 30 items

Table 2. Principal component analysis with varimax orthogonal rotation for the JSS-NPCU and 5 factors solution ($n = 420$)

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
28	.880				
20	.843				
27	.839				
15	.736				.371
19	.719				
26	.682		.303		
29	.672		.325		
30	.636				
24	.616		.494	.368	
25	.573		.416		
16	.553				
11	.551		.387		.386
7		.893			
8		.865			
6		.860			
10		.714			
9		.692			
5		.639		.432	
17			.788		
22			.707	.313	
23	.431		.622	.356	
18			.589		
21	.333		.431		.429
2				.635	
3	.351	.308		.618	
4		.511		.577	.335
1		.385		.570	
12					.718
13					.702
14		.467			.630

were grouped into five distinct domains or factors. Experts labeled these domains as follows: 1) working environment (12 items), 2) value of work (6 items), 3) work support and welfare (5 items), 4) success and progress (4 items), and 5) work abilities (3 items), as shown in **Table 3**. The factor loadings of each

identified domain ranged from .431 to .893, indicating adequate contribution of the item to its domain. Also, the communality measures (h^2) ranged from .429 to .834, indicating adequate explanation by its domain.

The 30-item JSS-NPCU is spread across five domains and exhibited varying Cronbach's alpha

Table 3. Factor loading and commonality measures of the JSS-NPCU scale (n = 420)

	Factor and item number	Factor loading	Commonalities (h^2)
Factor 1 “Satisfaction with the working environment” : (12 items)			
28	Satisfied with the kindness of colleagues in the organization ท่านพ่อใจในน้ำใจในมิตรของผู้ร่วมงาน	.880	.834
20	Workplace colleagues are hospitable to each other บุคลากรในที่ทำงานมีความเอื้อเฟื้อเผื่อแผ่ต่อกัน	.843	.771
27	Satisfied with colleagues in the organization ท่านพ่อใจต่อการทำงานร่วมกับบุคลากรในหน่วยงาน	.839	.781
15	Your colleagues encourage you to work เพื่อนร่วมงานช่วยทำให้ท่านเกิดกำลังใจทำงาน	.736	.700
19	Work environment makes generates a lot of enthusiasm in you บรรยากาศในที่ทำงานของท่านทำให้ท่านมีความกระตือรือร้น	.719	.659
26	Satisfied with the organizational environment ท่านพ่อใจต่อสภาพแวดล้อมของหน่วยงานนี้	.682	.623
29	Satisfied with the safety and security in the organization ท่านพ่อใจต่อระบบความปลอดภัยในหน่วยงานนี้	.672	.572
30	Satisfied to work at this primary care unit ท่านพ่อใจที่ได้ปฏิบัติงานที่หน่วยบริการปฐมภูมินี้	.636	.592
24	Satisfied with the management of the organization ท่านพ่อใจต่อรูปแบบการบริหารงานของหน่วยงาน	.616	.770
25	Satisfied with the service time management of the organization ท่านพ่อใจต่อการจัดเวลาการปฏิบัติงานที่เป็นอยู่	.573	.583
16	Your organization supports you to study and training for knowledge enhancement หน่วยงานของท่านมีการสนับสนุนให้ล่าศึกษาต่อ / อบรม / สัมมนาเพื่อเพิ่มพูนความรู้	.553	.429
11	You have been given fair assignments ท่านได้รับมอบหมายงานอย่างยุติธรรม	.551	.580
Factor 2 “Satisfaction with having value of work” : (6 items)			
7	Your work can help others งานที่ท่านทำงานสามารถช่วยเหลือผู้อื่นได้	.893	.820
8	Your work impacts the population's health งานที่ท่านทำมีความสำคัญต่อสุขภาพของประชาชน	.865	.768
6	Your work can be beneficial for others งานที่ท่านทำมีประโยชน์ต่อผู้อื่น	.860	.791

Table 3. Factor loading and commonality measures of the JSS-NPCU scale (n = 420) (Cont.)

	Factor and item number	Factor loading	Commonalities (h^2)
10	The community gets value from your health service คุณในชุมชนเห็นคุณค่าในการบริการสุขภาพของท่าน	.714	.624
9	Feeling challenged with your work การปฏิบัติงานเป็นความท้าทายในการทำงานของท่าน	.692	.511
5	Get value from your job ท่านรู้สึกมีคุณค่าที่ได้ทำงาน	.639	.680
Factor 3 “Satisfaction with support for work and welfare” : (5 items)			
17	Human resource match with the organization workload อัตรากำลังของบุคลากรเพียงพอต่อภาระงานของหน่วยงาน	.788	.693
22	Satisfied with your current salary / welfare ท่านพอใจต่อเงินเดือน / สวัสดิการที่ได้รับในปัจจุบัน	.707	.623
23	Satisfied with the evaluation of work / promotion in organization ท่านพอใจต่อการพิจารณาประเมินผลงาน / การเลื่อนตำแหน่งในองค์กร	.622	.697
18	Enough medical supplies, health resources medical equipment and ready to use หน่วยงานมีเวชภัณฑ์ อุปกรณ์ เครื่องมือ และเวชภัณฑ์เพียงพอและพร้อมใช้งาน	.589	.552
21	Satisfied with your current responsibilities ท่านมีความพึงพอใจต่อหน้าที่ที่รับผิดชอบในปัจจุบัน	.431	.607
Factor 4 “Satisfaction with work success and progress” : (4 items)			
2	Job assignment makes progress of your work งานที่ได้รับมอบหมายช่วยให้เกิดความก้าวหน้าในงานของท่าน	.635	.549
3	Leaders and colleges accept with your job หัวหน้าและผู้ร่วมงานยอมรับในผลงานของท่าน	.618	.649
4	Proud of your job performance ท่านภูมิใจในผลงานที่ได้ปฏิบัติ	.577	.717
1	Successful with their job assignment ท่านประสบความสำเร็จในงานที่ได้รับมอบหมาย	.570	.518
Factor 5 “Satisfaction with the work abilities” : (3 items)			
12	The assignments are suitable for your abilities งานที่ได้รับมอบหมายเหมาะสมกับความสามารถของท่าน	.718	.760
13	You are good at with your work งานที่ท่านทำอยู่เป็นงานที่ท่านถนัด	.702	.709
14	You use your full abilities with your work ท่านสามารถใช้ความสามารถที่อย่างเต็มที่	.630	.657

coefficients for each domain. Notably, the highest coefficient of .935 was associated with satisfaction with the working environment, while the lowest coefficient of .685 pertained to satisfaction with work

support and welfare. The reliability of the entire scale was .944, as shown in **Table 4**.

The analysis of the JSS-NPCU revealed that the number of domains differed from the conceptual

Table 4. Cronbach's alpha coefficients of each domain of the Job Satisfaction Scale of Primary Care Nurses in Thailand (n = 420)

Number of domains	Domains of job satisfaction	Item	Cronbach's alphas
1	The working environment สิ่งแวดล้อมในการปฏิบัติงาน	12	.935
2	The value of work คุณค่าในการปฏิบัติงาน	6	.717
3	Work support and welfare การสนับสนุนการปฏิบัติงานและสวัสดิการ	5	.685
4	Success and progress ความสำเร็จและความก้าวหน้า	4	.800
5	Work abilities ความสามารถในการปฏิบัติงาน	3	.836
Total		30	.944

framework. The final five domains were named based on their conceptualization from the literature review. In addition, the naming of each factor was based on the representative factor loading for that factor and expert opinions.^{31,35} The five factors classified by EFA

were reasonably consistent with the initial theoretical framework. A comparison of the components of the initial draft and the final JSS-NPCU is presented in **Table 5**.

Discussion

Table 5. Comparison between conceptual components and study results of the job satisfaction components of nurses in Thai PCUs (n = 420)

Conceptual domains of the JSS-NPCU	Study result domains of the JSS-NPCU
1. Sense of value (10 items)	1. The value of work (6 items)
2. Working conditions (10 items)	2. Success and progress (4 items)
3. Support (10 items)	3. The working environment (12 items)
	4. Work support and welfare (5 items)
	5. Work abilities (3 items)

The scale development and psychometric evaluation process in this study revealed that the JSS–NPCU demonstrated satisfactory content validity, construct validity, and internal consistency reliability. Although the final JSS–NPCU, consisting of five domains, differed from the initial proposed conceptual framework with three domains, it exhibited a fair degree of consistency. The first change regarded satisfaction, the sense of value, was divided into two domains: satisfaction with the value of work and satisfaction with work success and progress. Secondly, the satisfaction with working conditions domain was renamed satisfaction with the working environment. Finally, satisfaction with support was divided into two domains: namely, support for work and welfare and work abilities. The resulting factors are described in detail below.

Factor 1: The working environment (12 items) was the first main factor in job satisfaction for nurses at the PCU. This finding is consistent with the work environment and support in a PCU. The work environment and support include organizational environment,^{7,11,16,23,30,37,38} safety and security,¹⁶ management of the organization, kindness and encouragement of the team,^{8,22,24,27} service time management, training support, and fair assignments.^{8,22,23,24,26,28} Furthermore, these factors align with findings from previous studies on work environment,⁴ supervision, quality of work life,^{7,39} teamwork,^{22,23,25} and fair promotion.^{24,25,27,28} This highlights the importance of workplace relationships,¹⁵ work environments, and work management in implementing strategies to enhance the job satisfaction of nurses in PCUs.

Factor 2: The value of work (6 items) was consistent with the feelings derived from the value of their health service, benefit for others, and challenges in their work.¹² This domain not only benefits others, but also has a significant impact on the health of others.^{2,8,9,10,11,12} These findings indicate that recognizing the value of their work can serve as a motivating factor for nurses, enabling them to provide health services that have a positive impact on the well-being of individuals receiving primary care.^{22,25,29}

Factor 3: Work support and welfare (5 items) aligns with nurses being satisfied with their current salary and welfare,^{8,22,23,24,26,27,29} the evaluation of their work/promotions,²⁸ and the availability of adequate medical supplies and health resources.^{16,17,19} These factors were consistent and motivated nurses to remain in their positions. Moreover, adequate staff and resources emerged as a significant factor in job satisfaction.

Factor 4: Success and progress (4 items) differs from the domains above. The findings are consistent with the progress made in their work, the sense of pride in job performance, success with their job, and the acceptance of their leaders and teammates.^{1,5,19,23,25,28} Success and progress in work encourage nurses to pursue their careers and contribute to their overall satisfaction with their profession. All these factors can serve as motivators and contribute to creating a work environment that increases job satisfaction and promotes professional growth and commitment.

Factor 5: The work abilities domain (3 items) was consistent with the nurses' ability to perform their work, satisfaction with their overall ability and responsibility to perform the work assigned to them, and ability to operate in working conditions that matched their abilities.^{8,16,17,18,22,23,26,28} These results indicate that competency, job experience, and ability contribute to their confidence related to their work. To further improve the nurses' work capabilities in PCUs, individual development programs, supervision, and mentoring support are required.

In conclusion, the final version of the 30-item JSS–NPCU with five domains differed slightly from the conceptual framework; the complex components of intrapersonal, interpersonal, work environment, and support were congruent with job satisfaction. Regarding the assessment of the intrapersonal aspects, it was shown that nurses require autonomy in their work, a sense of fulfillment in their abilities, and recognition of the value and meaningfulness of their work. In terms of the interpersonal aspects, factors such as supportive supervision, a fair salary and welfare, acknowledgment of their work abilities, team support,¹⁵ and adequate medical

supplies are significant factors for encouraging the nurses' work and promoting their overall success and progress. Regarding the work environment aspect,²⁰ teamwork, team relationships, the organizational environment,²¹ fair work assignments, and work safety and security are crucial factors that contribute to increased job satisfaction among nurses in PCUs.

The domains of the job satisfaction scale in this study share similarities with those reported in previous research. These shared domains include the work environment, professional autonomy, social aspects, and nursing supervision. However, there are noteworthy distinctions between this study and a previous study.²³ In this present research, additional domains were examined, including safety and security at work, workplace relationships, work management, adequate medical and health resources supply, a sense of pride in job competence, shifting and scheduling of work, nursing policies and systems within the hospital, and the ability to confront difficulties assertively. Nurses working in PCUs fulfill unique roles, requiring them to provide care to both individuals and communities in diverse settings.¹¹ They also assume responsibilities for managing limited healthcare resources and facilitating the continuity of care from PCUs to hospitals. These distinctions highlight the varying domains of nurse job satisfaction between hospital and primary care settings.²² These factors collectively serve as significant motivators that enhance nurse job satisfaction in PCUs. The scale employed in this study has demonstrated its reliability and validity in assessing the job satisfaction of nurses working in primary care settings, making it a valuable tool for future research and evaluation.

Limitations

Since the JSS–NPCU is a newly developed instrument, this study employed exploratory factor analysis to determine the potential underlying structure of the latent construct, the PCU nurses' job satisfaction. It is considered to be a preliminary step for validating

the construct validity of this construct, which will require further study to confirm its structure, such as confirmatory factor analysis (CFA), known-groups method, or criterion-related validation by using another scale to examine the correlation between them, both the domains and the items.

Implications for nursing practice and research

Although the JSS–NPCU needs further testing, it can be used to assess the job satisfaction of nurses working in PCUs to enhance their motivation and engagement while creating a supportive environment with ample resources to meet quality of care standards and promote overall satisfaction. Therefore, if health policymakers were to implement programs to enhance nurses' job satisfaction, it would be beneficial for the health and well-being of clinical nurses and for the health of patients who receive nursing care in the PCUs. The findings of this study can be used to assess the nurses' job satisfaction, which can then lead to follow-up action plans based on the knowledge and understanding of how to improve the nurses' job satisfaction that is gained.

While the JSS–NPCU instrument was developed for Thai PCU nurses, it is essential to recognize that there might be culturally specific contexts within Thailand that require further refinement and development to ensure that its standard use with nurses throughout the country is consistent with the best practices in the field.

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Appendix

Table 1. The reviews of nurse' job satisfaction scales

Researcher/ Year/ Title	Country/ Participants	Scale	Domains/ Subdomains	Validity/ Reliability
Sriratanaprapat J, ²³ Chaowailit A, Sutharangsee W (2012) Development and Psychometric Evaluation of the 'Thai Nurses' Job Satisfaction Scale	Thailand 963 nurses from 12 general hospitals	Job Satisfaction Scale for Thai Nurses (TNJSS)	1. Incentives 2. Professional autonomy and recognition 3. Nursing supervisor 4. Social aspect at work 5. Workload 6. Work environment 7. Nursing policies and system 8. Assertiveness in confronting difficulties	CVI: .97 Cronbach's alpha coefficient's was .87. KMO: 0.97 The model explained 60.35% of the variance.
Mcglyn K, ²⁴ Griffin QM, Donahue M, Fitzpatrick JJ (2012) Registered nurse job satisfaction and satisfaction with the professional practice model	USA RNs (N = 182) working on the four units	Index of Work Satisfaction, Part B (IWS-Part B)	1. Pay 2. Professional status 3. Doctor–nurse relationship 4. Administration 5. Autonomy 6. Task requirements and interaction	In the present study, the total IWS Cronbach's alpha coefficient was .77. Cronbach's alpha coefficients for each of the subscales were: 1. Pay .80, 2. Professional status .73, 3. Autonomy .69, 4. Organizational policies .74, 5. Task requirements .76 6. Interactions .71.
Muya M, ²⁵ Katsuyama K, Ozaki F, Aoyama H. (2014) Development of a scale measuring the job satisfaction of Japanese hospital nurses	Japan 412 nurses Kinki region in Japan	Job satisfaction scale consisting of four factors and 28 items	1. Positive emotions toward work 2. Appropriate support from superiors 3. Perceived significance in the workplace 4. Pleasant working environment	The cumulative contribution rate was 43.9%. Cronbach's alpha coefficient was .91.

Table 1. The reviews of nurse' job satisfaction scales (Cont.)

Researcher/ Year/ Title	Country/ Participants	Scale	Domains/ Subdomains	Validity/ Reliability
Liu Y, ⁸ Aungsuroch Y, Yunibhand J (2016) Development and psychometric testing of the Chinese Nurses Job Satisfaction Scale	China 510 nurses in regional general hospital	CFA: Seven factors of nurses' job satisfaction with 34 items	1. Promotion and individual growth 2. Recognition and responsibility 3. Salary and fringe benefits 4. Work conditions 5. Administration 6. Family and work balance 7. Interaction	The model fit statistics were $\chi^2 = 433.70$, p-value = .07, df = 391, GFI = .95, RMSEA = .02, AGFI = .93, and CFI = 1.00). The overall Cronbach's alpha coefficient was .93.
Semachew A, ²⁶ Belachew T, Tesfaye T, Adinew MY. (2017) Predictors of job satisfaction among nurses working in Ethiopian public hospitals, 2014: institution-based cross-sectional study	Ethiopian 316 nurses working in Ethiopian public hospitals	The McCloskey / Mueller Satisfaction Scale (MMSS) 8 subscales with 29 items	1. Extrinsic reward 2. Scheduling 3. Family and work balance 4. Coworkers 5. Interaction 6. Professional opportunity 7. Praise and recognition 8. Control and responsibility	Cronbach's alpha coefficient was .90.
Byoung-Sook L, ²⁷ Yong-Sook E, Mi-Aie L. (2018) Development of Job Satisfaction Scale for Clinical Nurses	Korea 360 clinical nurses	Job Satisfaction Scale for Clinical Nurses (JSS-CN) Six factors, 37 items	1. Recognition from the organization and professional achievement through the nursing profession 2. Personal maturation through the nursing profession 3. Interpersonal interaction with respect and recognition 4. Accomplishment of accountability as a nurse 5. Display of professional competency 6. Stability and job worth	Cronbach's alpha coefficient for the total scale was .95, and the intra-class correlation coefficient was .90. Explained 59.7% of the total variance

Table 1. The reviews of nurse' job satisfaction scales (Cont.)

Researcher / Year / Title	Country / Participants	Scale	Domains/ Subdomains	Validity/ Reliability
Tsounis A, ²⁸ Sarafis P. (2018)	Greek of various specialties in drug addiction treatment	The Job Satisfaction Survey (JSS) nine subscales with 36 items	1. Pay .62 2. Promotion .67 3. Supervision .87 4. Fringe Benefits .73 5. Contingent rewards .71 6. Operating procedures .48 7. Coworkers .67 8. Nature of Work .74 9. Communication .71.	Cronbach's alpha coefficient ranged from .48 to .87. Overall, the reliability estimate for the total scale was .87.
Validity and reliability of the Greek translation of the Job Satisfaction Survey (JSS)				The RMSEA = .055, CFI = .951 and GFI values = .946.
Ayalew F, ²² Kibwana S, Shawula S, Misganaw E, Abosse Z, Roosmalen VJ, Stekelenburg J, Kim M Y, Teshome M, Mariam WD. (2019)	Ethiopia in 9 hospitals and of nurses at the 116 health centers health facility level	The job satisfaction (3 intrinsic factors with 12 items)	3 Intrinsic factors 1. Recognition 2. Professional development 3. Features of the work itself	Exploratory factor analysis showed that the Cronbach's alpha coefficient for all job conditions was .89, Cronbach's alpha coefficients of intrinsic factors and extrinsic factors were .80 and .84 respectively
Understanding job satisfaction and motivation among nurses in public health facilities of Ethiopia: a cross-sectional study		(5 Extrinsic factors with 22 items)	5 Extrinsic factors 1. Remuneration 2. Supervision 3. Interpersonal relationship 4. Work conditions 5. Living conditions	
Yasin M Y, ²⁹ Kehyayan V, Khrain F, Al-Lenjawi B. (2022)	Qatar working in acute care settings of four public hospitals using their work email addresses	the Acute Care Nurses Job Satisfaction Scale-Revised (ACNJSS-R)	1. Supervision 2. Workplace policy 3. Growth and Advancement 4. Benefits 5. Work environment	The reliability >.7 for all factors The new model explained 68.9% of the variance. The Kaiser-Meyer-Olkin measure of sampling adequacy was .92, and Bartlett's test of sphericity was statistically significant ($\chi^2 = 3,012.06$, df = 105, p <.001)

การพัฒนาและทดสอบคุณภาพของมาตรการวัดความพึงพอใจต่อการปฏิบัติงานของพยาบาลไทย ณ หน่วยบริการสุขภาพปฐมภูมิ

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บทคัดย่อ: พยาบาลเป็นบุคลากรหลักที่สำคัญในการให้บริการสุขภาพอย่างครอบคลุมตามกลุ่มอายุ และมีต่อการติดต่อสุขภาพ ณ หน่วยบริการสุขภาพระดับปฐมภูมิ ในประเทศไทย การให้บริการสุขภาพ ระดับปฐมภูมิส่วนใหญ่ไม่แพทายประจำหน่วยบริการ ดังนั้นพยาบาลจึงมีบทบาทในการปฏิบัติการพยาบาล ที่แตกต่างจากพยาบาลในโรงพยาบาล นอกจากนี้ ภาระงานหนัก การปฏิบัติงานที่น่าอกจากภาระพยาบาล สภาพแวดล้อมการทำงานที่ไม่ปลอดภัย จำกัดโอกาสในการพัฒนาทางวิชาชีพ และการพักอาศัยใน เขตชนบท ล้วนเป็นส่วนทำให้เกิดความท้อแท้ในการทำงาน การวัดความพึงพอใจของพยาบาลต้องการเครื่องมือวัด ที่มีความแตกต่างกับมาตรการวัดเดิมที่สร้างขึ้นเพื่อวัดความพึงพอใจของพยาบาลที่ปฏิบัติงานในโรงพยาบาล การศึกษาเนี้ยมีวัตถุประสงค์เพื่อพัฒนาและทดสอบคุณภาพเครื่องมือวัดความพึงพอใจของพยาบาลที่ ปฏิบัติงานที่หน่วยบริการสุขภาพปฐมภูมิ โดยมีพยาบาลประจำหน่วยบริการสุขภาพระดับปฐมภูมิ 420 คน เข้าร่วมการศึกษา มาตรวัดความพึงพอใจนี้สร้างขึ้นโดยการทบทวนวรรณกรรม เครื่องมือวัด ความพึงพอใจต่อการปฏิบัติงานของพยาบาล ร่วมกับการสนทนากลุ่ม และข้อคิดเห็นจากผู้เชี่ยวชาญ ตรวจสอบความตรงเชิงเนื้อหา ได้รับการปรับปรุงเพื่อวัด 3 องค์ประกอบ จำนวน 30 ข้อ มีผลความเที่ยงตรง ของเนื้อหางานคือ 0.75 และค่าความน่าเชื่อถือของเครื่องมืออยู่ในเกณฑ์ที่ดี

ทดสอบคุณลักษณะที่ดีทางวิทยาของเครื่องมือวัดด้วยการวิเคราะห์องค์ประกอบเชิงลึกเพื่อ กำหนดความตรงเชิงโครงสร้าง ความที่ยังตຽบเทียบกัน และความน่าเชื่อถือของเครื่องมือ ผลการศึกษาพบว่า เครื่องมือวัดความพึงพอใจของพยาบาลที่ปฏิบัติงาน ณ หน่วยบริการสุขภาพปฐมภูมิ ประกอบด้วย 5 องค์ประกอบ จำนวน 30 ข้อ ประกอบด้วย สภาพแวดล้อมในการปฏิบัติงาน คุณค่าในการปฏิบัติงาน ความสำเร็จและความก้าวหน้า ความสามารถในการปฏิบัติงาน และการสนับสนุนการปฏิบัติงานและ สวัสดิการ ค่าการร่วมสามารถอธิบายความแปรปรวนของเครื่องมือวัดทั้ง 30 ข้อในแต่ละองค์ประกอบได้ โดยความแปรปรวนในแต่ละองค์ประกอบ ค่าความเที่ยงตรงภายใน และความน่าเชื่อถือของเครื่องมืออยู่ใน เกณฑ์ที่ดี มาตรวัดความพึงพอใจต่อการปฏิบัติงานของพยาบาลที่ปฏิบัติงาน ณ หน่วยบริการสุขภาพปฐมภูมิ สามารถนำไปใช้ประเมินความพึงพอใจในงานของพยาบาลในหน่วยบริการปฐมภูมิได้ อย่างไรก็ตาม จำเป็นต้องมีการประเมินความตรงเชิงโครงสร้างเพิ่มเติมโดยวิธีอื่นในการศึกษาต่อไป

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